

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: HENRY HU Examiner #: 79349 Date: 10-20-04Art Unit: 1713 Phone Number 30-272-1103 Serial Number: 10-660437Mail Box and Bldg/Room Location: AU1713 Results Format Preferred (circle): PAPER DISK E-MAIL**If more than one search is submitted, please prioritize searches in order of need.**

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Fluoroelastomers having low temperature characteristics and solvent resistanceInventors (please provide full names): Harald Kasper, Klaus Hinter, Guy Goel
Allan Worm, Tatsuo Fukushi, Fray MargEarliest Priority Filing Date:

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search the tetrapolymer having ^{only} the four monomer units

of (A) tetrafluoroethylene $\text{F}-\text{C}=\text{C}-\text{F}$ (or TFE)

(B) Vinylidene fluoride $\text{F}-\text{C}=\text{C}-\text{H}$ (or VDF, V_2F)

(C) $\text{CF}_2=\text{CF}-\text{O}-\text{CF}_2-\text{CF}_2-\text{CF}_2-\text{OCF}_3$ (or MV31)

(D) $\text{CF}_2=\text{CF}-\text{OCF}_3$ (or PMVE)

See copy of claim 1



STIC Search Report

EIC 1700

STIC Database Tracking Number: 135584

TO: Henry Hu
Location: Rem 10 A20
Art Unit : 1713
October 22, 2004

Case Serial Number: 10/660437

From: Kathleen Fuller
Location: EIC 1700
REMSEN 4B28
Phone: 571/272-2505
Kathleen.Fuller@uspto.gov

Search Notes

I searched the 4 compounds as component registry numbers of a polymer. There were only 2 polymers with all four and 1 CA reference. Unfortunately each polymer had one or two extra components.

I also showed you the applicant and how CA structurally indexed the application. The structure components of the polymer are a little different from what you wanted..

Then I searched the 4 compounds as starting monomers. There were 2 references. One may be good but the priority date and one of the applicants are the same as on your application.

=> FILE REG
FILE 'REGISTRY' ENTERED AT 11:04:23 ON 22 OCT 2004
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Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES: 20 OCT 2004 HIGHEST RN 766487-31-4
DICTIONARY FILE UPDATES: 20 OCT 2004 HIGHEST RN 766487-31-4

TSCA INFORMATION NOW CURRENT THROUGH MAY 21, 2004

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:

<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> D QUE L11

L7 4370 SEA FILE=REGISTRY ABB=ON 116-14-3/CRN TF E
L8 2183 SEA FILE=REGISTRY ABB=ON 75-38-7/CRN VDF
L9 16 SEA FILE=REGISTRY ABB=ON 40573-09-9/CRN MV 31
L10 289 SEA FILE=REGISTRY ABB=ON 1187-93-5/CRN PMVF
L11 2 SEA FILE=REGISTRY ABB=ON L7 AND L8 AND L9 AND L10

=> D L11 1-2

L11 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2004 ACS on STN
RN 346607-79-2 REGISTRY
CN 1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, 1,3,5-tri-2-propenyl-, polymer with
1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethyl)oxy]-3-
(trifluoromethoxy)propane, tetrafluoroethene, trifluoro(1,1,2,2-
tetrafluoroethoxy)ethene and trifluoro(trifluoromethoxy)ethene (9CI) (CA
INDEX NAME)

OTHER CA INDEX NAMES:

CN Ethene, 1,1-difluoro-, polymer with 1,1,2,2,3,3-hexafluoro-1-
[(trifluoroethyl)oxy]-3-(trifluoromethoxy)propane, tetrafluoroethene,
trifluoro(1,1,2,2-tetrafluoroethoxy)ethene, trifluoro(trifluoromethoxy)ethene
and 1,3,5-tri-2-propenyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione (9CI)
CN Ethene, tetrafluoro-, polymer with 1,1-difluoroethene,
1,1,2,2,3,3-hexafluoro-1-[(trifluoroethyl)oxy]-3-
(trifluoromethoxy)propane, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene,
trifluoro(trifluoromethoxy)ethene and 1,3,5-tri-2-propenyl-1,3,5-triazine-
2,4,6(1H,3H,5H)-trione (9CI)
CN Ethene, trifluoro(1,1,2,2-tetrafluoroethoxy)-, polymer with
1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethyl)oxy]-3-
(trifluoromethoxy)propane, tetrafluoroethene,
trifluoro(trifluoromethoxy)ethene and 1,3,5-tri-2-propenyl-1,3,5-triazine-
2,4,6(1H,3H,5H)-trione (9CI)
CN Ethene, trifluoro(trifluoromethoxy)-, polymer with 1,1-difluoroethene,
1,1,2,2,3,3-hexafluoro-1-[(trifluoroethyl)oxy]-3-

Only 2 polymers have
all four components. Unfortunately
each polymer has a
6th over the component

(trifluoromethoxy)propane, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene and 1,3,5-tri-2-propenyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione (9CI)

CN Propane, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)-, polymer with 1,1-difluoroethene, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene, trifluoro(trifluoromethoxy)ethene and 1,3,5-tri-2-propenyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione (9CI)

OTHER NAMES:

CN 2-Bromo-1,1,2,2-tetrafluoroethyl trifluorovinyl ether-perfluoro(methoxypropyl vinyl ether)-perfluoro(methyl vinyl ether)-tetrafluoroethylene-triallyl isocyanurate-vinylidene fluoride copolymer

MF (C12 H15 N3 O3 . C6 F12 O2 . C4 H F7 O . C3 F6 O . C2 H2 F2 . C2 F4)x

CI PMS

PCT Fluoropolymer, Polyvinyl

SR CA

LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

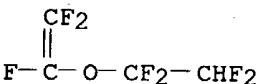
DT.CA Cplus document type: Patent

RL.P Roles from patents: PREP (Preparation)

CM 1

CRN 63391-81-1

CMF C4 H F7 O

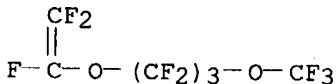


eftra

CM 2

CRN 40573-09-9

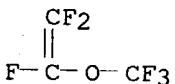
CMF C6 F12 O2



CM 3

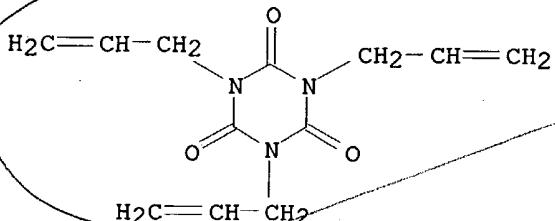
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CMF C3 F6 O



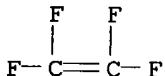
CM 4

CRN 1025-15-6
CMF C12 H15 N3 O3



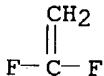
CM 5

CRN 116-14-3
CMF C2 F4



CM 6

CRN 75-38-7
CMF C2 H2 F2



1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L11 ANSWER 2 OF 2 REGISTRY COPYRIGHT 2004 ACS on STN
RN 346607-77-0 REGISTRY
CN Propane, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)-, polymer with 1,1-difluoroethene, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene and trifluoro(trifluoromethoxy)ethene (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Ethene, 1,1-difluoro-, polymer with 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)propane, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene and trifluoro(trifluoromethoxy)ethene (9CI)
CN Ethene, tetrafluoro-, polymer with 1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)propane, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene and trifluoro(trifluoromethoxy)ethene (9CI)
CN Ethene, trifluoro(1,1,2,2-tetrafluoroethoxy)-, polymer with 1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-

(trifluoromethoxy)propane, tetrafluoroethene and trifluoro(trifluoromethoxy)ethene (9CI)

CN Ethene, trifluoro(trifluoromethoxy)-, polymer with 1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)propane, tetrafluoroethene and trifluoro(1,1,2,2-tetrafluoroethoxy)ethene (9CI)

MF (C₆ F₁₂ O₂ . C₄ H F₇ O . C₃ F₆ O . C₂ H₂ F₂ . C₂ F₄)_x

CI PMS

PCT Fluoropolymer, Polyvinyl

SR CA

LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

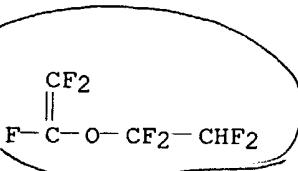
DT.CA CAplus document type: Patent

RL.P Roles from patents: PREP (Preparation); PROC (Process)

CM 1

CRN 63391-81-1

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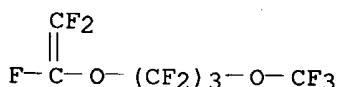


extra

CM 2

CRN 40573-09-9

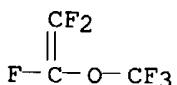
CMF C₆ F₁₂ O₂



CM 3

CRN 1187-93-5

CMF C₃ F₆ O



CM 4

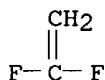
CRN 116-14-3

CMF C₂ F₄



CM 5

CRN 75-38-7
CMF C2 H2 F2



1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> FILE HCAPLU
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FILE COVERS 1907 - 22 Oct 2004 VOL 141 ISS 17
FILE LAST UPDATED: 20 Oct 2004 (20041020/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> S L11
L16 1 L11
=> D L16 BIB ABS IND HITSTR

L16 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:467938 HCAPLUS
DN 135:78104
TI Fluoro elastomers, their production and their vulcanizates
IN Abe, Katsumi; Tatsu, Haruyoshi
PA Nippon Mektron, Japan
SO Ger. Offen., 10 pp.

*1 CA reference from the
2 polymers*

CODEN: GWXXBX

DT Patent
 LA German
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10063993 JP 2001181350 US 2001008922 US 6380337	A1 A2 A1 B2	20010628 20010703 20010719 20020430	DE 2000-10063993 JP 1999-364885 US 2000-745097	20001221 19991222 20001220
PRAI	JP 1999-364885	A	19991222		

AB Fluoro rubbers with good resistance to chems. and environmental conditions are based on vinylidene fluoride (VDF) 65-85, perfluoro(methoxypropyl vinyl ether) 0.5-30, tetrafluoroethylene (TFE) 0-10, and perfluoro(alkyl vinyl ether) 0-25 mol% and are prepared in the presence of a haloorg. compound. The elastomers are peroxide-crosslinkable. An example was obtained from VDF, TFE, MPVE, perfluoro(Me vinyl ether), and CF₂:CFOCF₂CF₂Br and subsequently crosslinked using Perhexa 25B (peroxide) and triallyl isocyanurate. The properties were superior to those of an elastomer prepared without MPVE.

IC ICM C08L027-16
 ICS C08L035-08; C08L027-18; C08K005-14

CC 39-4 (Synthetic Elastomers and Natural Rubber)

ST fluoro rubber prodn peroxide vulcanization

IT Vulcanization accelerators and agents
 (for peroxide vulcanization of fluoro elastomers)

IT Vulcanization
 (production and peroxide vulcanization of fluoro elastomers)

IT Fluoro rubber
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
 (production and peroxide vulcanization of fluoro elastomers)

IT 78-63-7, Perhexa 25B
 RL: CAT (Catalyst use); USES (Uses)
 (catalyst for peroxide vulcanization of fluoro elastomers)

IT 346607-77-0P 346607-78-1P
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
 (rubber; production and peroxide vulcanization of fluoro elastomers)

IT 346607-79-2P 346607-80-5P
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (rubber; production of peroxide-vulcanized fluoro elastomers)

IT 346607-77-0P
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
 (rubber; production and peroxide vulcanization of fluoro elastomers)

RN 346607-77-0 HCPLUS

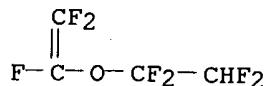
CN Propane, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)-, polymer with 1,1-difluoroethene, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene and trifluoro(trifluoromethoxy)ethene (9CI) (CA INDEX NAME)

CM 1

CRN 63391-81-1

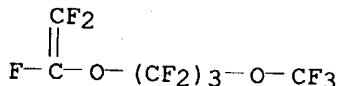
CMF C4 H F7 O

102(b) ?
 However, TFE & VDF
 ratio may be off



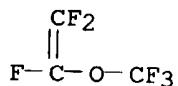
CM 2

CRN 40573-09-9
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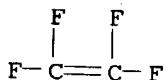
CM 3

CRN 1187-93-5
CMF C3 F6 O



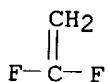
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CRN 116-14-3
CMF C2 F4



CM 5

CRN 75-38-7
CMF C2 H2 F2

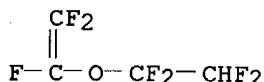


IT 346607-79-2P
RL: IMF (Industrial manufacture); PREP (Preparation)
(rubber; production of peroxide-vulcanized fluoro elastomers)
RN 346607-79-2 HCAPLUS
CN 1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, 1,3,5-tri-2-propenyl-, polymer with

1,1-difluoroethene, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)propane, tetrafluoroethene, trifluoro(1,1,2,2-tetrafluoroethoxy)ethene and trifluoro(trifluoromethoxy)ethene (9CI) (CA INDEX NAME)

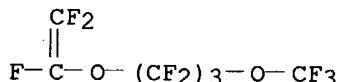
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CRN 63391-81-1
CMF C4 H F7 O



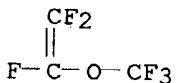
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CRN 40573-09-9
CMF C6 F12 02



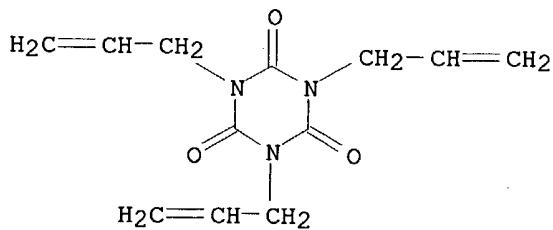
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CRN 1187-93-5
CMF C3 F6 O



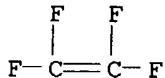
CM 4

CRN 1025-15-6
CMF C12 H15 N3 O3



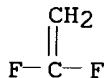
CM 5

CRN 116-14-3
CMF C2 F4



CM 6

CRN 75-38-7
CMF C2 H2 F2



=> => D L14 ALL

L14 ANSWER 1 OF 1 HCPLUS COPYRIGHT 2004 ACS on STN
AN 2004:252553 HCPLUS
DN 140:272182
ED Entered STN: 26 Mar 2004
TI Perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products
IN Kaspar, Harald; Hintzer, Klaus; Van Gool, Guy; Marz, Franz; Worm, Allan T.; Fukushi, Tatsuo
PA 3M Innovative Properties Company, USA
SO PCT Int. Appl., 27 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM C08F014-00
ICS C08K005-14
CC 39-4 (Synthetic Elastomers and Natural Rubber)
Section cross-reference(s): 37
FAN.CNT 1

applicant

*Please note
the structures
indeped for
this reference*

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004024786	A1	20040325	WO 2003-US28610	20030911
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EC, EE, EE, EG, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,				

GW, ML, MR, NE, SN, TD, TG
US 2004127661 A1 20040701 US 2003-660437 20030911 <--
PRAI US 2002-410225P P 20020912
CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2004024786	ICM	C08F014-00
	ICS	C08K005-14
AB	A fluoroelastomer with Tg of -25° or below and solvent swell <60 % comprises repeating units derived from 10-40 mol% tetrafluoroethylene, 40-65 mol% of vinylidene fluoride, 1-30 mol% perfluorinated vinyl ether with the formula: $CF_2 = CFOCF2CF2CF2OCF_3$, 1-20 mol% of perfluoromethyl vinyl ether, and chain transfer agent. The fluoroelastomer is prepared by radical aqueous suspension or emulsion polymerization, and curable with peroxide to obtain a core-shell material. Thus, bromotetrafluorobutene, perfluoromethyleneether, perfluoromethoxypropyl vinyl ether, tetrafluoroethylene, and vinylidenedifluoride were emulsion radical polymerized in the presence of ammonium peroxodisulfate, and then vulcanized using peroxide catalyst (Trigonox 101 45B).	
ST	perfluorinated vinyl ether fluoroelastomer fluoropolymer peroxide vulcanization prepn	
IT	Polymerization (aqueous, radical; perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)	
IT	Polymerization (emulsion, radical; perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)	
IT	Vulcanization accelerators and agents (perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)	
IT	Fluoro rubber Fluoropolymers, preparation RL: IMF (Industrial manufacture); PREP (Preparation) (perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)	
IT	Polymerization (radical, suspension; perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)	
IT	Peroxides, uses RL: CAT (Catalyst use); USES (Uses) (vulcanization; perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)	
IT	<u>7727-54-0</u> RL: CAT (Catalyst use); USES (Uses) (perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)	
IT	<u>261178-84-1</u> , Trigonox 101 45B RL: CAT (Catalyst use); USES (Uses) (vulcanization catalyst; perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)	
IT	673496-31-6P 673496-32-7P RL: IMF (Industrial manufacture); PREP (Preparation) (vulcanized; perfluorinated vinyl ether-containing fluoroelastomer and its vulcanization products)	

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Abe; US 0008922 A1 2001

(2) Nippon, M; US 5891974 A 1999 HCPLUS

=> SEL RN L14
E5 THROUGH E8 ASSIGNED

=> FILE REG
FILE 'REGISTRY' ENTERED AT 11:06:40 ON 22 OCT 2004
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STRUCTURE FILE UPDATES: 20 OCT 2004 HIGHEST RN 766487-31-4
DICTIONARY FILE UPDATES: 20 OCT 2004 HIGHEST RN 766487-31-4

TSCA INFORMATION NOW CURRENT THROUGH MAY 21, 2004

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> S E5-E8

1 261178-84-1/BI
(261178-84-1/RN)
1 673496-31-6/BI
(673496-31-6/RN)
1 673496-32-7/BI
(673496-32-7/RN)
1 7727-54-0/BI
(7727-54-0/RN)

L17 4 (261178-84-1/BI OR 673496-31-6/BI OR 673496-32-7/BI OR 7727-54-0
/BI)

=> D L17 1-4

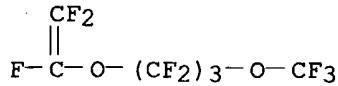


Structures from applicant

L17 ANSWER 1 OF 4 REGISTRY COPYRIGHT 2004 ACS on STN
RN 673496-32-7 REGISTRY
CN Propane, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-
(trifluoromethoxy)-, polymer with bromotrifluoroethene,
1,1-difluoroethene, oxybis[trifluoromethane] and tetrafluoroethene (9CI)
(CA INDEX NAME)
MF (C6 F12 O2 . C2 H2 F2 . C2 Br F3 . C2 F6 O . C2 F4)x
CI PMS
PCT Fluoropolymer, Polyether, Polyvinyl
SR CA
LC STN Files: CA, CAPLUS, USPATFULL
DT.CA Cplus document type: Patent
RL.P Roles from patents: PREP (Preparation)

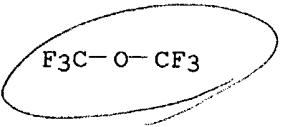
CM 1

CRN 40573-09-9
CMF C6 F12 O2



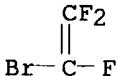
CM 2

CRN 1479-49-8
CMF C2 F6 O


F₃C-O-CF₃

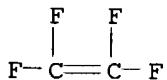
CM 3

CRN 598-73-2
CMF C2 Br F3



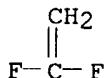
CM 4

CRN 116-14-3
CMF C2 F4



CM 5

CRN 75-38-7
CMF C2 H2 F2



1 REFERENCES IN FILE CA (1907 TO DATE)

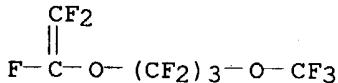
KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L17 ANSWER 2 OF 4 REGISTRY COPYRIGHT 2004 ACS on STN
RN 673496-31-6 REGISTRY
CN 1-Butene, 4-bromo-3,3,4,4-tetrafluoro-, polymer with 1,1-difluoroethene,
1,1,2,2,3,3-hexafluoro-1-[(trifluoroethyl)oxy]-3-
(trifluoromethoxy)propane, oxybis[trifluoromethane] and tetrafluoroethene
(9CI) (CA INDEX NAME)
MF (C6 F12 O2 . C4 H3 Br F4 . C2 H2 F2 . C2 F6 O . C2 F4)x
CI PMS
PCT Fluoropolymer, Polyether, Polyvinyl
SR CA
LC STN Files: CA, CAPLUS, USPATFULL
DT.CA CAplus document type: Patent
RL.P Roles from patents: PREP (Preparation)

CM 1

CRN 40573-09-9
CMF C6 F12 O2



CM 2

CRN 18599-22-9
CMF C4 H3 Br F4

$\text{H}_2\text{C}=\text{CH}-\text{CF}_2-\text{CF}_2-\text{Br}$

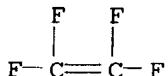
CM 3

CRN 1479-49-8
CMF C2 F6 O

$\text{F}_3\text{C}-\text{O}-\text{CF}_3$

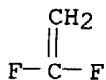
CM 4

CRN 116-14-3
CMF C2 F4



CM 5

CRN 75-38-7
CMF C2 H2 F2



1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L17 ANSWER 3 OF 4 REGISTRY COPYRIGHT 2004 ACS on STN
RN 261178-84-1 REGISTRY
CN Trigonox 101-45B (9CI) (CA INDEX NAME)
ENTE A peroxide curing agent (Akzo Nobel Chemical)
MF Unspecified
CI MAN
SR CA
LC STN Files: CA, CAPLUS, USPATFULL
DT.CA CAplus document type: Conference; Journal; Patent
RL.P Roles from patents: USES (Uses)
RL.NP Roles from non-patents: RACT (Reactant or reagent); USES (Uses)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

5 REFERENCES IN FILE CA (1907 TO DATE)
5 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L17 ANSWER 4 OF 4 REGISTRY COPYRIGHT 2004 ACS on STN
RN 7727-54-0 REGISTRY
CN Peroxydisulfuric acid ([(HO)S(O)2]2O2), diammonium salt (8CI, 9CI) (CA INDEX NAME)
OTHER NAMES:
CN Ammonium peroxidodisulfate
CN Ammonium peroxydisulfate
CN Ammonium peroxydisulfate ((NH4)2S2O8)
CN Ammonium peroxysulfate
CN Ammonium persulfate
CN Bis(ammonium) peroxydisulfate
CN Diammonium peroxydisulfate
CN Diammonium peroxydisulphate
CN Diammonium persulfate
CN Enplate AD 485
CN Panreac PA
DR 398469-95-9
MF H3 N . 1/2 H2 O8 S2
CI COM
LC STN Files: AGRICOLA, ANABSTR, AQUIRE, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DRUGU, EMBASE, GMELIN*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NIOSHTIC, PDLCOM*, PROMT, RTECS*, TOXCENTER, TULSA, ULIDAT, USPAT2, USPATFULL

(*File contains numerically searchable property data)

Other Sources: DSL**, EINECS**, TSCA**

(**Enter CHEMLIST File for up-to-date regulatory information)

DT.CA CAplus document type: Book; Conference; Dissertation; Journal; Patent; Report

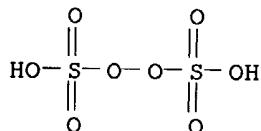
RL.P Roles from patents: ANST (Analytical study); BIOL (Biological study); FORM (Formation, nonpreparative); MSC (Miscellaneous); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses); NORL (No role in record)

RLD.P Roles for non-specific derivatives from patents: BIOL (Biological study); PREP (Preparation); PROC (Process); PRP (Properties); USES (Uses)

RL.NP Roles from non-patents: ANST (Analytical study); BIOL (Biological study); CMBI (Combinatorial study); FORM (Formation, nonpreparative); MSC (Miscellaneous); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses); NORL (No role in record)

RLD.NP Roles for non-specific derivatives from non-patents: ANST (Analytical study); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses)

CRN (13445-49-3)



●2 NH₃

5535 REFERENCES IN FILE CA (1907 TO DATE)

25 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

5550 REFERENCES IN FILE CAPLUS (1907 TO DATE)

22 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> => D QUE

Search by starting Monomers

L1	1	SEA FILE=REGISTRY ABB=ON	TETRAFLUOROETHYLENE/CN
L2	1	SEA FILE=REGISTRY ABB=ON	"VINYLDENE FLUORIDE"/CN
L3	2	SEA FILE=REGISTRY ABB=ON	"MV 31"/CN
L4	1	SEA FILE=REGISTRY ABB=ON	L3 AND C6F12O2/MF
L5	10	SEA FILE=REGISTRY ABB=ON	C3F6O/MF
L6	1	SEA FILE=REGISTRY ABB=ON	L5 AND ETHER
L18	7288	SEA FILE=HCAPLUS ABB=ON	L1 OR TETRAFLUOROETHYLENE OR TFE
L19	17453	SEA FILE=HCAPLUS ABB=ON	L2 OR VINYLDENE FLUORIDE OR VDF
L20	22	SEA FILE=HCAPLUS ABB=ON	L4 OR MV31 OR MV(W)31
L21	336	SEA FILE=HCAPLUS ABB=ON	L6 OR PMVE OR PERFLUOROMETHYL VINYL ETHER
L22	2	SEA FILE=HCAPLUS ABB=ON	L18 AND L19 AND L20 AND L21

2 CA references with all 4

=> D L22 BIB ABS IND HITSTR 1-2

L22 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2004:220056 HCAPLUS

DN 140:254842
 TI Fluoroelastomers with improved permeation resistance for sealing
 applications and their manufacture
 IN Fukushi, Tatsuo; Worm, Allan T.; Hare, Erik D.; Bennett, Greggory S.;
Coggio, William D.
 PA 3M Innovative Properties Company, USA
 SO U.S. Pat. Appl. Publ., 8 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004054055	A1	20040318	US 2003-659877	20030911
	WO 2004024788	A1	20040325	WO 2003-US28472	20030911
		W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU			
		RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

PRAI US 2002-410138P P 20020912

AB The compound is prepared, suitable for forming fluoroelastomers, having the unique features of a low glass transition temperature and desirable permeation resistance. The compound comprises (a) an amorphous copolymer including interpolymd. units derived from ≥ 1 perfluorinated ether (e.g., a copolymer of **vinylidene fluoride**, tetrafluoroethylene, perfluoro-3-methoxypropyl vinyl ether and cure site monomer); and (b) a curable component including ≥ 1 filler having ≥ 10 parts/100 parts. first component (e.g., zinc oxide, carbon black, triallyl isocyanurate and peroxide). Upon vulcanization the resulting elastomeric compound has Shore A hardness ≥ 60 , retraction at lower temps. (TR-10) $\leq -25^\circ$ and permeation rate ≤ 65 g-mm/m²-d.

IC ICM C08K003-30

NCL 524423000; 524493000; 524451000; 524445000; 524425000; 524434000;
 524431000; 524544000

CC 39-9 (Synthetic Elastomers and Natural Rubber)

ST fluoro elastomer improved permeation resistance seal

IT Fillers

Seals (parts)

Vulcanization accelerators and agents

(fluoroelastomers with improved permeation resistance for sealing applications)

IT Peroxides, uses

RL: CAT (Catalyst use); USES (Uses)

(fluoroelastomers with improved permeation resistance for sealing applications)

IT Carbon black, uses

RL: MOA (Modifier or additive use); USES (Uses)

(fluoroelastomers with improved permeation resistance for sealing applications)

IT Clays, uses

RL: MOA (Modifier or additive use); USES (Uses)

(fluoroelastomers with improved permeation resistance for sealing applications)

IT Diatomite
RL: MOA (Modifier or additive use); USES (Uses)
(fluoroelastomers with improved permeation resistance for sealing applications)

IT Fluoro rubber
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(fluoroelastomers with improved permeation resistance for sealing applications)

IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(micropowders; fluoroelastomers with improved permeation resistance for sealing applications)

IT 80-05-7, reactions 1025-15-6, Triallyl isocyanurate
RL: RCT (Reactant); RACT (Reactant or reagent)
(curing agent; fluoroelastomers with improved permeation resistance for sealing applications)

IT 78-63-7, Varox DBPH 50
RL: CAT (Catalyst use); USES (Uses)
(fluoroelastomers with improved permeation resistance for sealing applications)

IT 471-34-1, Calcium carbonate, uses 1314-13-2, Zinc oxide, uses 1332-37-2, Iron oxide, uses 7631-86-9, Silica, uses 7727-43-7, Barium sulfate 7782-42-5, Graphite, uses 7789-75-5, Calcium fluoride, uses 13463-67-7, Titanium oxide, uses 13983-17-0, Wollastonite 14807-96-6, Talc, uses
RL: MOA (Modifier or additive use); USES (Uses)
(fluoroelastomers with improved permeation resistance for sealing applications)

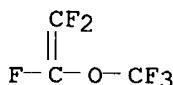
IT 1187-93-5D, **Perfluoromethyl vinyl ether**, polymers with perfluorinated monomers
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(fluoroelastomers with improved permeation resistance for sealing applications)

IT 75-38-7D, **Vinylidene fluoride**, polymers with perfluorinated ethers 116-14-3, Tetrafluoroethylene, uses 40573-09-9D, **MV 31**, polymers with perfluorinated ethers
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(rubber; fluoroelastomers with improved permeation resistance for sealing applications)

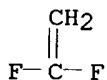
IT 1187-93-5D, **Perfluoromethyl vinyl ether**, polymers with perfluorinated monomers
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(fluoroelastomers with improved permeation resistance for sealing applications)

RN 1187-93-5 HCAPLUS

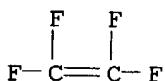
CN Ethene, trifluoro(trifluoromethoxy)- (9CI) (CA INDEX NAME)



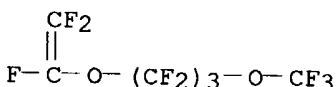
IT 75-38-7D, **Vinylidene fluoride**, polymers with perfluorinated ethers 116-14-3, **Tetrafluoroethylene**, uses 40573-09-9D, **MV 31**, polymers with perfluorinated ethers
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(rubber; fluoroelastomers with improved permeation resistance for sealing applications)
RN 75-38-7 HCAPLUS
CN Ethene, 1,1-difluoro- (9CI) (CA INDEX NAME)



RN 116-14-3 HCAPLUS
CN Ethene, tetrafluoro- (9CI) (CA INDEX NAME)



RN 40573-09-9 HCAPLUS
CN Propane, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethenyl)oxy]-3-(trifluoromethoxy)- (9CI) (CA INDEX NAME)



L22 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1984:198461 HCAPLUS
DN 100:198461
TI Solubility of different fluorine-containing compounds in water and aqueous solutions of fluoroorganic surfactants
AU Veretennikov, N. V.; Reshetova, L. I.; Fil'chakova, T. A.
CS USSR
SO Vestnik Leningradskogo Universiteta, Seriya 4: Fizika, Khimiya (1984), (1), 112-14
CODEN: VLUFBI; ISSN: 0024-0826
DT Journal
LA Russian
AB Solubilities were determined at 20° for tetrafluoroethylene, hexafluoropropylene, **vinylidene fluoride**, **perfluoromethyl vinyl ether**,

trifluoroethylene, perfluoromethoxypropyl vinyl ether, and perfluoropropyl vinyl ether. Heats of solution in water were also determined

CC 68-1 (Phase Equilibriums, Chemical Equilibriums, and Solutions)
Section cross-reference(s): 69

ST fluorine compd soly water surfactant; vinyl fluoro compd soly; ether vinyl fluoro soly

IT Heat of solution
Solubility
(of fluorine-containing organic compds., in water and aqueous fluoroorg. surfactants)

IT Surfactants
(solubilities of fluorine-containing organic compds. in aqueous solns. of)

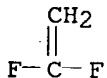
IT 7782-41-4D, organic compds.
RL: PRP (Properties)
(solubilities and heats of solution of, in water and aqueous fluoroorg. surfactants)

IT 75-38-7 116-14-3, properties 116-15-4 359-11-5
1187-93-5 1623-05-8 40573-09-9
RL: PRP (Properties)
(solubility of, in water and aqueous fluoroorg. surfactants)

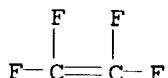
IT 75-38-7 116-14-3, properties 1187-93-5
40573-09-9
RL: PRP (Properties)
(solubility of, in water and aqueous fluoroorg. surfactants)

RN 75-38-7 HCPLUS

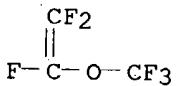
CN Ethene, 1,1-difluoro- (9CI) (CA INDEX NAME)



RN 116-14-3 HCPLUS
CN Ethene, tetrafluoro- (9CI) (CA INDEX NAME)

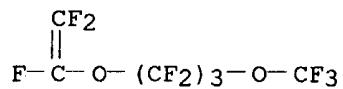


RN 1187-93-5 HCPLUS
CN Ethene, trifluoro(trifluoromethoxy)- (9CI) (CA INDEX NAME)



RN 40573-09-9 HCPLUS
CN Propane, 1,1,2,2,3,3-hexafluoro-1-[(trifluoroethyl)oxy]-3-(trifluoromethoxy)- (9CI) (CA INDEX NAME)

HU 10/660437 10/21/04 Page 20



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